Session 707

Darwin Documentation Project & Header Doc

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Senior Tools and Darwin Doc Manager

Darwin Doc Project

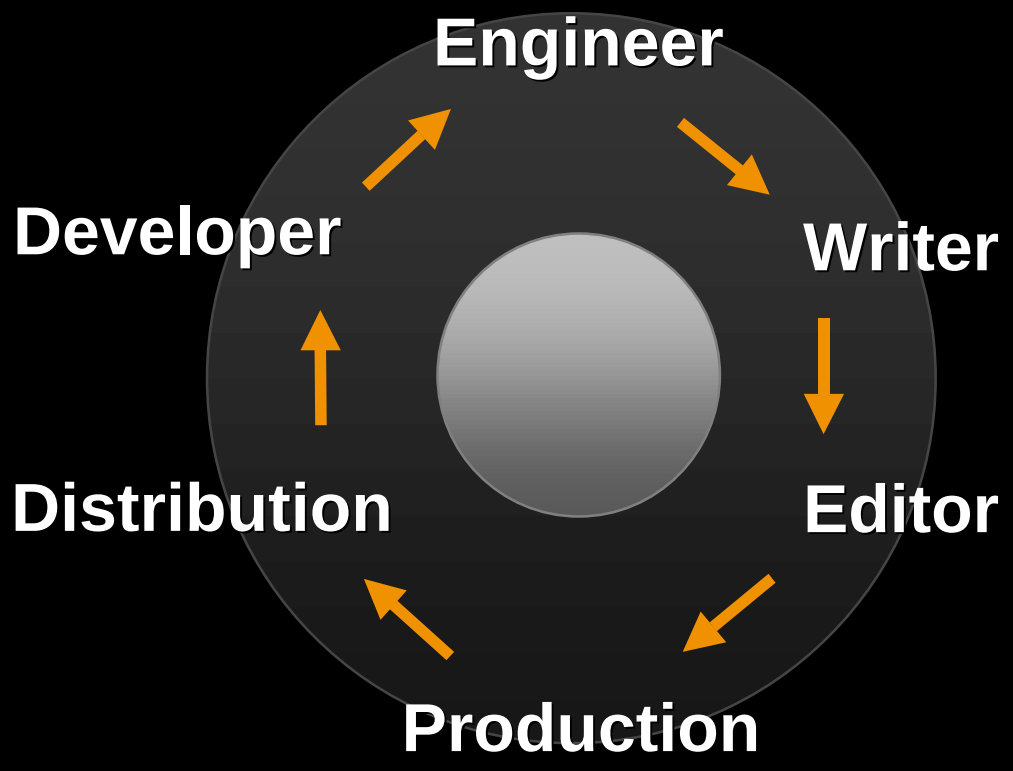
- What Darwin covers
- Revolution in documentation
- HeaderDoc
- HOWTO documents
- man pages
- What doc exists
- What's missing

What Darwin Covers

- Mach/BSD Kernel
- Kernel extensions: drivers/filesystems/networking
- System framework
- Command-line environment
- Network services

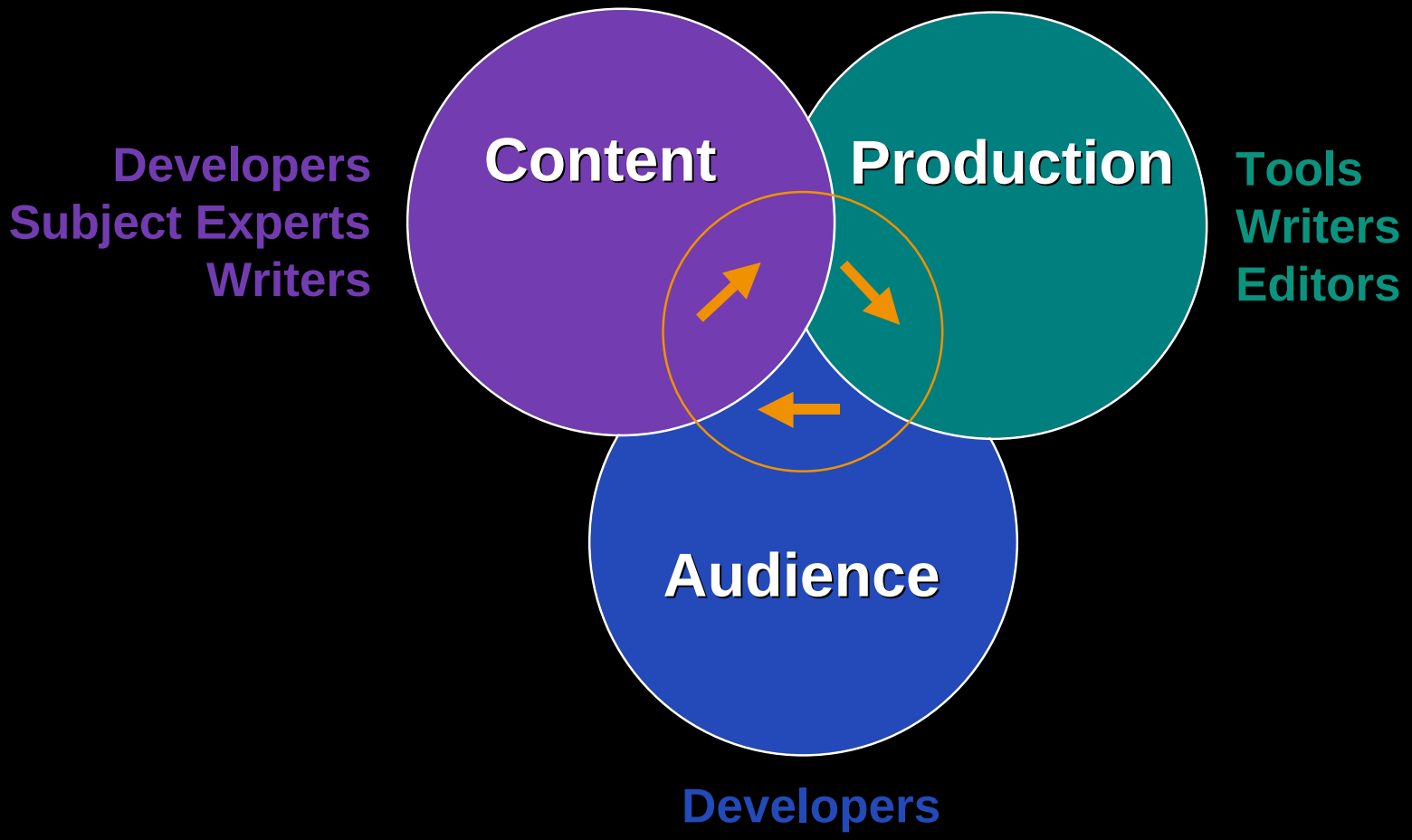
Revolution in Documentation

Traditional model



Revolution in Documentation

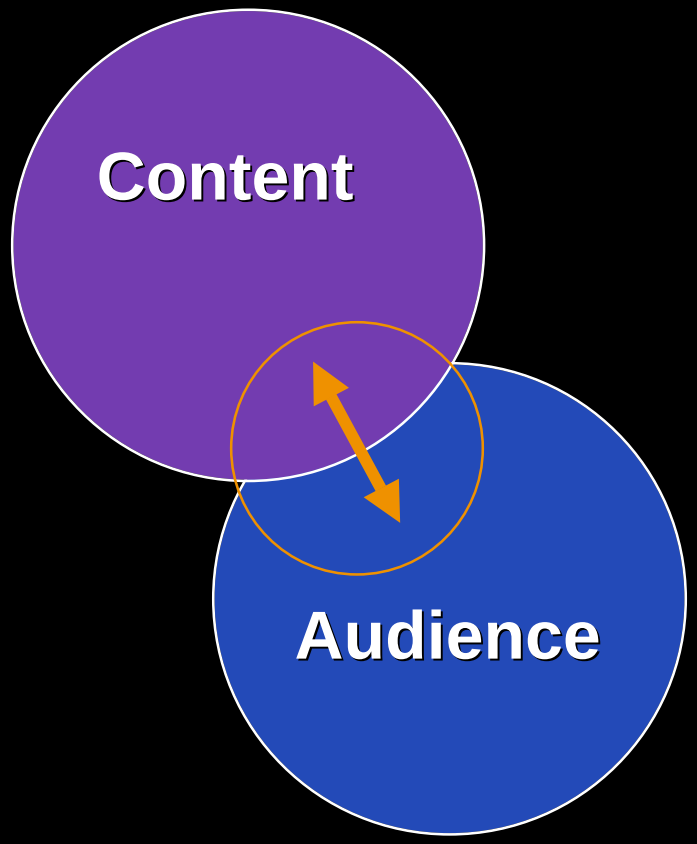
New model



Revolution in Documentation

New model

Developers
Subject Experts
Writers



Developers

HeaderDoc

- Doc as source code
- Header-based doc for C and C++ projects
- Similar to JavaDoc tags

HeaderDoc

Tagged API information

```
/*!
 @function IOFBCreateSharedCursor
 @abstract Create shared cursor...
 @discussion This function allocates...
 @param connect The connect handle...
 @result A kern_return_t error code.
*/

kern_return_t IOFBCreateSharedCursor(...)
```

Demo

HeaderDoc

Matt Morse
Senior Tools Engineer

HeaderDoc

Commands

```
> headerdoc2html -o OutputDir InputDir

> gatherheaderdoc OutputDir
```

HeaderDoc Goals

- All C and C++ API in Darwin use HeaderDoc
- Support Objective-C
- Mac OS X: Fully integrate with ProjectBuilder

HOWTO Documents

- Self-contained useful articles
- Solve a particular problem
- Provided by anyone who has the knowledge
- Authored in DocBook XML

http://www.opensource.apple.com/projects/documentation/howto

What Is DocBook XML?

- XML is structured information
- DocBook XML is the industry standard
- Lots of info in the Darwin Doc HOWTO
- Or just send it to the list and we'll turn it into XML

http://www.opensource.apple.com/projects/documentation/howto/html/Darwin_Doc_HOWTO.html

XML

Content-based tags

```
<title>Darwin HOWTO Template</title>

<firstname>Ron</firstname>

<email>rhayden@apple.com</email>
```

XML

Tags are hierarchical and closed

```
<revhistory>
    <revision>
        <revnumber>1</revnumber>
        <date>January 14, 2001</date>
        <revremark>Created.</revremark>
    </revision>
</revhistory>
```

XML

You only need a subset of DocBook tags

<section>
<title>
<para>
<itemizedlist>
<orderedlist>
<programlisting>
<ulink>

Demo

DocBook

Matt Morse
Senior Tools Engineer

XML

Command

```
> xsltproc docbook.xsl file.xml > file.html
```

XML

Revision history tags

```
<revhistory>
    <revision>
        <revnumber>1</revnumber>
        <date>January 14, 2001</date>
        <revremark>Created.</revremark>
    </revision>
</revhistory>
```

HOWTO Goals

- Document all common tasks
  - Building Darwin
- Cover all common driver families
- Handle topics that the community covers better than Apple
  - Booting on Intel

man Pages

- Critical for Darwin development
- Need some work
- A focus for the next few months

man Page Goals

- A complete set of accurate and useful man pages
- Move man pages to the right projects
- Clean up old bugs
- Stay in sync with upstream man pages
- Get developers to maintain project man pages
- Mac OS X: HTML display

What Doc Exists

ADC Mac OS X Web site

Kernel Developer Documentation

Back Forward Stop Refresh Home AutoFill Larger Smaller Sherlock Source

Address: http://developer.apple.com/techpubs/macosx/Kernel/kernel.html

Favorites History Search Scrapbook Page Holder

Kernel Developer Documentation

General Information

Start Here

Should You Program in the Kernel?
Roadmap to Information

Developer Guides

System Overview
(HTML) (Hardcopy)
The Kernel Environment
Accessing Hardware From Applications

Related Sites

Darwin Open Source
Apple Tech Info Library
FreeBSD
Mach Documentation (OSF)
Fatbrain.com Hardcopy

API Information

Device Drivers

Writing a Device Driver
Network Driver Example
PCI Driver Example
The I/O Kit Registry (PDF)

Kernel Extensions

Network Kernel Extensions (PDF)
Loading Kernel Extensions at Boot Time (PDF)

Tutorials

Kernel Extensions Tutorials (PDF)

Internet zone

What Doc Exists

ADC Mac OS X Web site content

- IOKit HeaderDoc
- IOKit tutorials
- Conceptual docs and cookbooks
  - Accessing Hardware: HID, USB, SAM, serial, storage
  - Writing drivers: PCI, Networking

http://developer.apple.com/techpubs/macosx/Kernel/kernel.html

What Doc Exists

Darwin HOWTO documents

- Darwin Developer Guide HOWTO
- Building Darwin HOWTO
- Intel Screen Resolution HOWTO
- Darwin Doc HOWTO

http://www.opensource.apple.com/projects/documentation/howto/

What Doc Exists

Kernel/IOKit HOWTO documents

- Hello Kernel HOWTO
- Hello IOKit HOWTO
- KEXT Packaging HOWTO
- Hello Debugger HOWTO

What Apple Is Working On

- Moving more content to Darwin project
- IOKit fundamentals book
- More cookbooks
  - FireWire, USB, SCSI, etc.
- Expanded reference
  - More HeaderDoc coverage

Open Source Opportunities

- Kernel programming/debugging basics
- Kernel architecture
- Kernel code performance
- VFS plug-ins
- Network Kernel Extensions out of date
- More HeaderDoc coverage

How to Contribute

- Ask the Darwin development list what they need
- Write a HOWTO!
  - Read the Darwin Doc HOWTO
  - Look at existing HOWTOs to see what you could add

1) http://www.opensource.apple.com/projects/mail.html

2) http://www.opensource.apple.com/projects/documentation/howto/

Who to Contact

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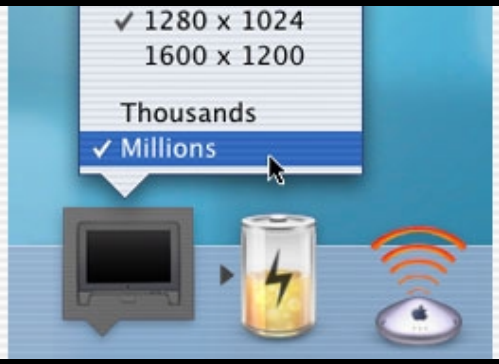
Q&A



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http://developer.apple.com/events/urls.html

WWDC
Worldwide Developers Conference 2001